

# THE LANCET

## Respiratory Medicine

### **Supplementary appendix**

This appendix formed part of the original submission and has been peer reviewed. We post it as supplied by the authors.

Supplement to: Fatnic F, Lee Blanco N, Cobiletschi R, et al. Outcome predictors and patient progress following delivery in pregnant and postpartum patients with severe COVID-19 pneumonitis in intensive care units in Israel (OB-COVICU): a nationwide cohort study. *Lancet Respir Med* 2023; published online Feb 3. [https://doi.org/10.1016/S2213-2600\(22\)00491-X](https://doi.org/10.1016/S2213-2600(22)00491-X).

**This online publication has been corrected. The corrected version first appeared at [thelancet.com/respiratory](https://www.thelancet.com/respiratory) on February 23 2023.**

## **APPENDIX for Lancet Respiratory Medicine**

**Title:** A nationwide cohort study of pregnant and postpartum patients with severe COVID-19 pneumonitis in intensive care units in Israel: outcome predictors and patient progress following delivery.

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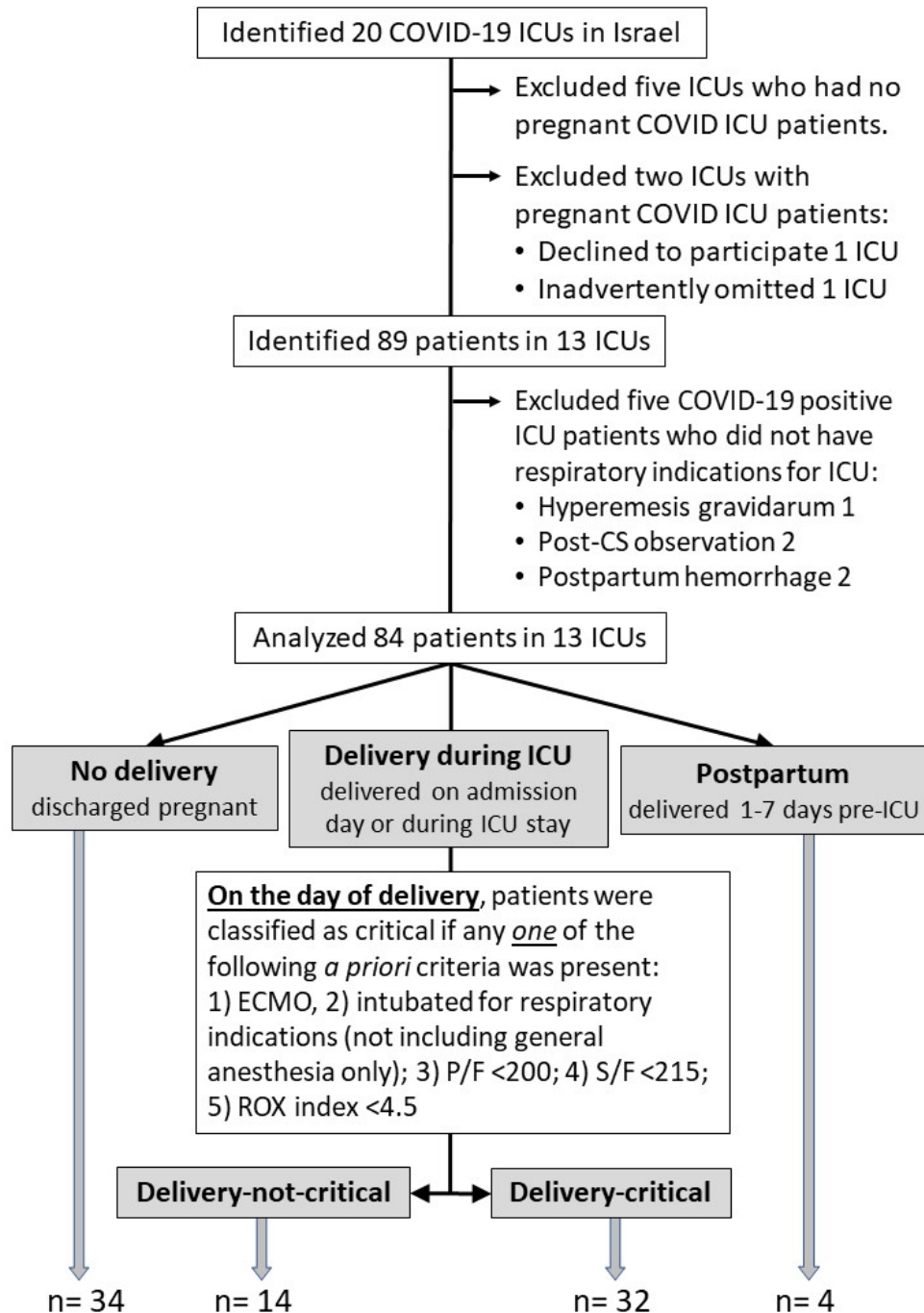
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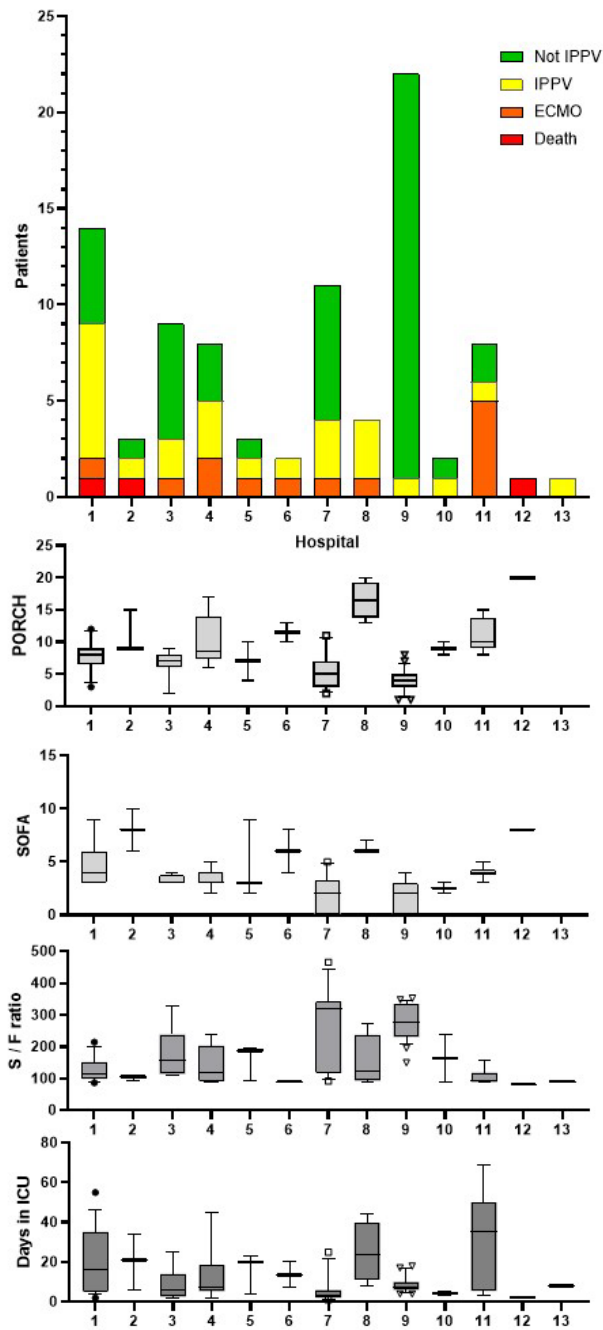
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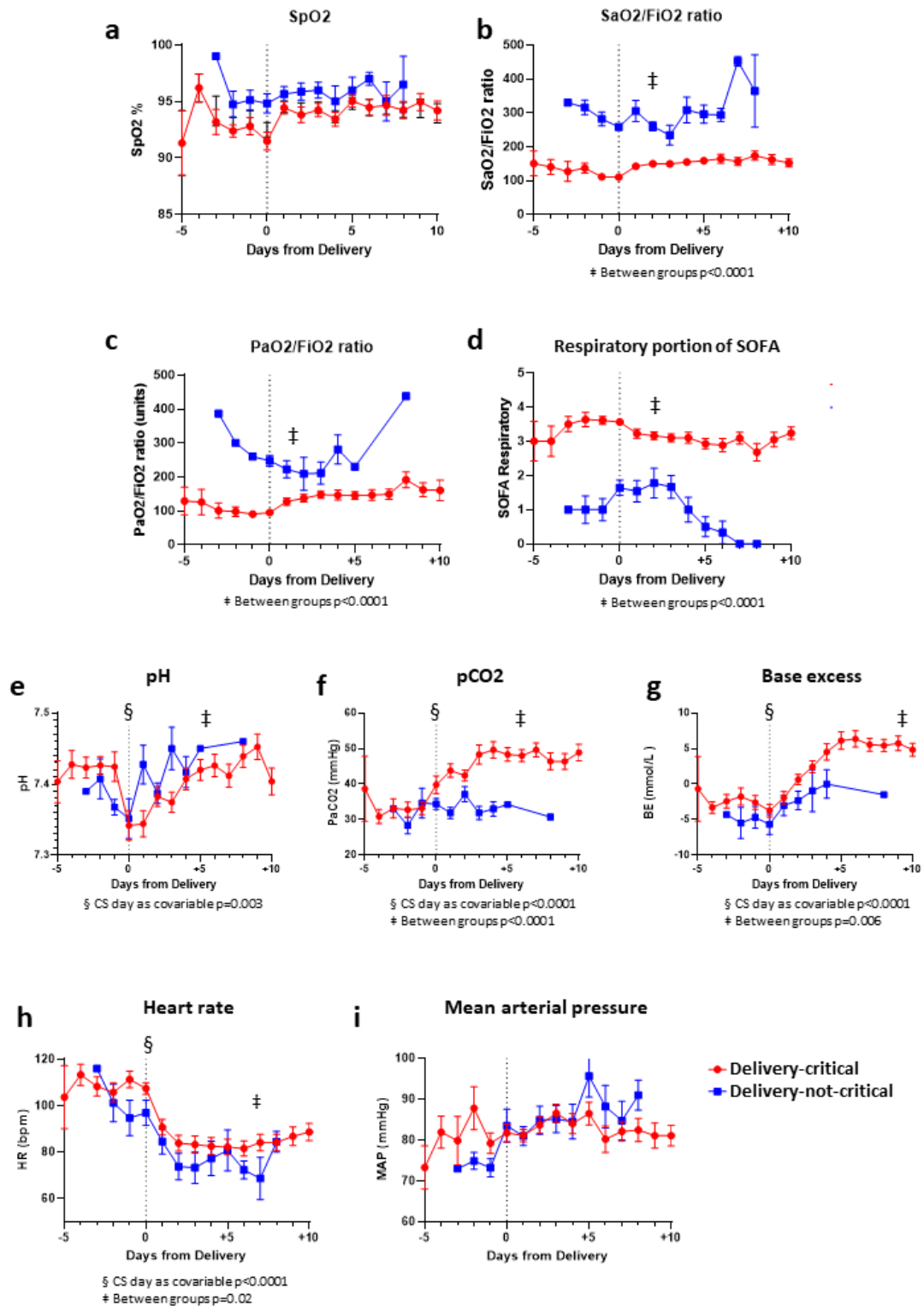
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**Supplementary Figure 1:** The study flow chart for the National OB-COVICU study. Ninety-two pregnant or postpartum patients with severe COVID-19 pneumonia in 14 Israeli ICUs in were identified. Of these 84 patients in 13 ICUs met study criteria and were analysed. Seven patients were transferred between ICUs, so that there were a total of 91 admissions for 84 patients (range, 1-23 patients/ICU). Of the 46 patients who delivered during their ICU stay, 45 had cesarean delivery and one had an induced vaginal delivery.



**Supplementary Figure 2:** There was marked diversity in the severity of patients between different hospitals in the OB-COVICU study. a) The maternal outcome is expressed as the highest level of intervention received by individual patients during their ICU stay – ranging from no IPPV (green), to IPPV (yellow), ECMO (orange), as well as death (red); for patients receiving more than one specified intervention, or who died, we reported only the worst of these, where no IPPV < IPPV < ECMO < death. Hence, the sum of these columns represents the total number of admissions for each ICU. In the lower graphs we represent b) mean SOFA scores on admission, c) mean S/F ratio on admission and d) mean ICU duration, separately for each hospital.

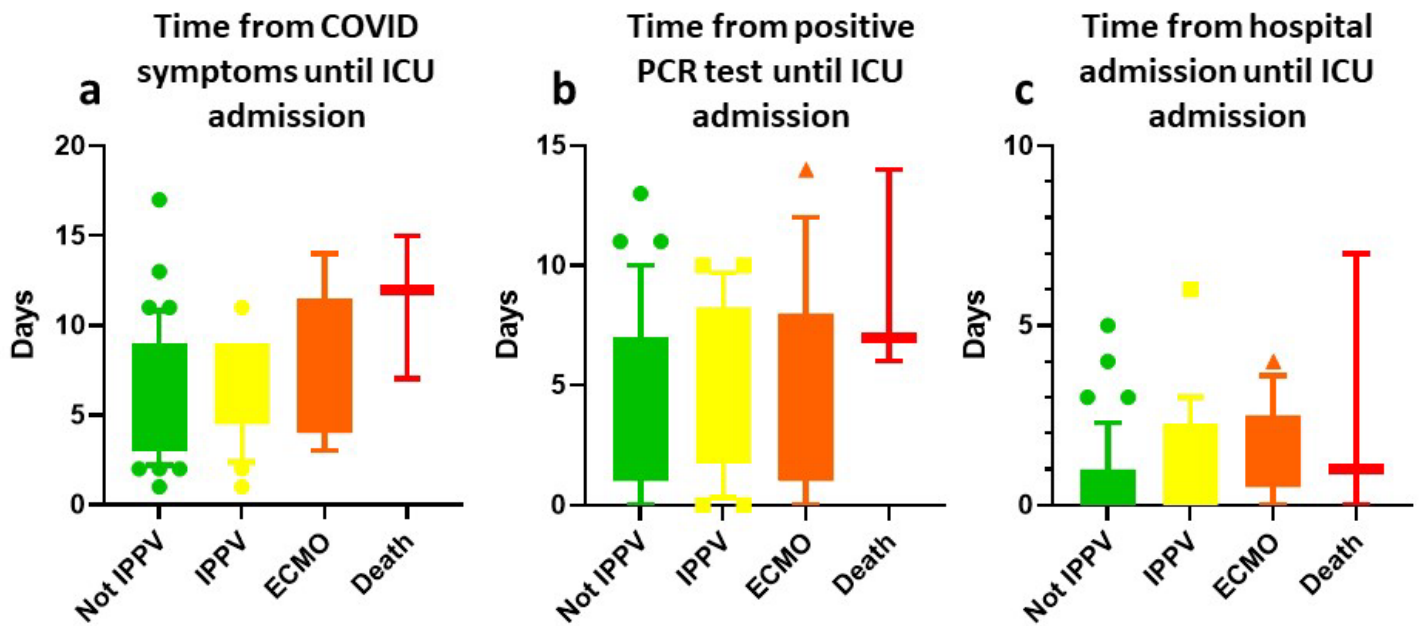


**Supplementary Figure 3:** Longitudinal data for the two delivery groups (critical and not critical), for the five days prior to delivery and the ten days following delivery. a) SpO<sub>2</sub>, b) S/F ratio, c) P/F ratio, d) respiratory portion of SOFA, e) pH, f) p<sub>a</sub>CO<sub>2</sub>, g) base excess, h) heart rate, and i) mean arterial pressure.

**a-d)**: The S/F ratio, P/F ratio and the respiratory component of SOFA were markedly different between the delivery-critical and delivery-not-critical groups ( $p<0.0001$ ). However, as the S/F ratio and the P/F ratio are incorporated in the definition of the critical and not-critical groups, this is to be expected. Similarly for the respiratory component of SOFA which is entirely based on the S/F ratio or P/F ratio.

**e-g)**: Arterial pH slightly increased in both groups in the postpartum period with respect to the day of delivery ( $p=0.03$ ), with no difference between groups ( $p=0.5$ ). There was a marked difference between “critical” and “not critical” groups in the postpartum changes for both  $p_a\text{CO}_2$  ( $p<0.0001$ ) and base excess ( $p<0.0001$ ), with groups diverging following delivery; the day of delivery was a highly significant “inflection-point” covariate for both  $p_a\text{CO}_2$  ( $p<0.0001$ ) and base excess ( $p<0.0001$ ). The “critical” group exhibited increased  $p_a\text{CO}_2$  from  $39.7 \pm 13.8$  mmHg on the day of delivery to  $48.3 \pm 14.4$  mmHg by the 3<sup>rd</sup> day postpartum and increased base excess from  $-3.7 \pm 4.6$  to  $0.75 \pm 1.3$  over the same time span. By contrast, in the “not critical” group there were smaller changes in the base excess with no change in the  $p_a\text{CO}_2$ .

**h-i)**: Heart rate reduced by approximately 25% after delivery in both groups from  $107.4 \pm 14.3$  to  $83.3 \pm 20.4$  in the “critical” and from  $97.0 \pm 20.2$  to  $73.3 \pm 16.7$  in the “not critical” groups; the day of delivery was a highly significant “inflection-point” covariate for both groups ( $p<0.0001$ ). This is in keeping with the normal physiological response to delivery. There was a significant difference between groups ( $p=0.02$ ), with a slightly lower heart rate throughout the ICU stay in the “non-critical” group. Mean arterial pressure did not change significantly after delivery ( $p=0.5$ ) and there was no difference between groups ( $p=0.9$ ), although this outcome does not take into consideration the vasopressor support required to maintain arterial pressure.



**Supplementary Figure 4:** Elapsed time until ICU admission from a) the onset of COVID-19 symptoms, b) the diagnosis of COVID-19 by positive PCR test, and c) from the time of hospital admission. Data presented for each of the four maternal outcome groups: not-IPPV (green), IPPV (yellow), ECMO (orange), death (red). Differences were not significantly significant. For elapsed times broken down by maternal outcomes, see Supplementary Table 4.

**Supplementary Table 1** The components of the SOFA score and the PORCH score.

	SOFA score			PORCH score		
PEEP requirement	<i>Not factored into SOFA</i>			0	< 6 cmH <sub>2</sub> O	
				1	6-8 cmH <sub>2</sub> O	
				2	9-11 cmH <sub>2</sub> O	
				3	12-14 cmH <sub>2</sub> O	
				4	≥15 cmH <sub>2</sub> O	
Oxygenation <i>PORCH and SOFA components identical. P/F ratio used if arterial blood gases available, otherwise S/F ratio used.</i>	0	P/F ≥400	S/F ≥302	0	P/F ≥400	S/F ≥302
	1	P/F <400	S/F <302	1	P/F <400	S/F <302
	2	P/F <300	S/F <221	2	P/F <300	S/F <221
	3	P/F <200	S/F <142	3	P/F <200	S/F <142
	4	P/F <100	S/F <67	4	P/F <100	S/F <67
Respiratory support	<i>Not factored into SOFA</i>			0	Room air	
				1	Nasal canula, face mask	
				2	HFNC, rebreathing mask	
				3	NIPPV – CPAP, BiPAP	
				4	IPPV	
				5	IPPV + nitric oxide or prone	
Chest Xray <sup>42</sup>	<i>Not factored into SOFA</i>			0	Normal (X-ray severity 0)	
				1	Mild (X-ray severity 1-4)	
				2	Moderate (X-ray severity 5-6)	
				3	Severe (X-ray severity 7-9)	
				4	Severest (X-ray severity 10)	
Haemodynamic support	0	No hypertension		0	No pressors; MAP ≥65 (or 75) mmHg	
	1	MAP < 70mmHg		1	No pressors; MAP <65 (or 75) mmHg	
	2	Dopamine (≤ 5 µg/kg/min) or Dobutamine (any dose)		2	Noraderanaline (or any single vasopressor)	-
	3	Dopamine (> 5 µg/kg/min) or Adrenaline (≤ 0.1 µg/kg/min) or Noradrenaline (≤ 0.1 µg/kg/min)		3	Noraderanaline	Vasopresin or Dopamine
	4	Dopamine (> 15 µg/kg/min) or Adrenaline (> 0.1 µg/kg/min) or Noradrenaline (> 0.1 µg/kg/min)		4	Noraderanaline	Vasopressin or Dopamine
						Adrenaline or Dobutamine or Milrinone (or any single positive inotrope)

**Supplementary Table 1 (continued)**

Glasgow Coma Scale	0	15	2	10-12	4	<6	<i>Not factored into PORCH</i>
	1	13-14	3	6-9			
Bilirubin	0	<1.2	2	2.0-5.9	4	≥ 12.0	<i>Not factored into PORCH</i>
	1	1.2-1.9	3	6.0-11.9			
Creatinine	0	<1.2	2	2.0-3.4	4	≥ 5.0	<i>Not factored into PORCH</i>
	1	1.2-1.9	3	3.5-4.9			
Platelets	0	>150	2	50-99	4	<20	<i>Not factored into PORCH</i>
	1	100-149	3	20-49			

Total score	SOFA = sum of: Oxygenation (0-4) Haemodynamic support (0-4) Glasgow Coma Scale (0-4) Bilirubin (0-4) Creatinine (0-4) Platelets (0-4)					PORCH = sum of:  <b>P</b> EEP requirement (0-4) <b>O</b> xygenation (0-4) <b>R</b> espiratory support (0-6) <b>C</b> hest Xray (0-4) <b>H</b> aemodynamic support (0-4)
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## **Supplementary Table 2**

List of all outcome data recorded in the OB-COVICU study. These outcome data include maternal outcomes (including respiratory complications, renal complications, or septic shock), obstetric outcomes for deliveries that occurred during the ICU stay (including mode of delivery, and gestational age at delivery), neonatal outcomes for deliveries that occurred during the ICU stay (including Apgar score at 5-min, neonatal IPPV, neonatal ICU admission, length of neonatal hospital stay and neonatal death), and longitudinal clinical variables recorded at admission and every morning during the ICU stay (including respiratory variables: SpO<sub>2</sub>, FiO<sub>2</sub>, arterial blood gases, calculated S/F ratio, P/F ratio, ROX index; haemodynamic variables: heart rate, mean arterial pressure; laboratory variables: serum sodium, potassium, urea, creatinine, bilirubin, lactate, C-reactive protein, ferritin, troponin, complete blood count, coagulation tests; and medications: antiviral drugs, steroids, antibiotics, sedatives, muscle relaxants, blood product administration, renal replacement therapy). Dates were collected for the following: hospital discharge (or death), ICU discharge, delivery, the start and end of IPPV, and the start and end of ECMO. Discharge data were collected from discharge summary, and the sum of all daily follow up notes, nursing notes and ICU charts recorded until discharge. Longitudinal data were measured at admission and every morning of ICU stay, typically between 6:00 to 8:00 am.

**Supplementary Table 2 (continued)**

	Data label	Data source	Data type	Data handling	Outcome	Analysis
Overall maternal outcomes	Maternal outcome	Discharge	Ordinal	Worst of following during ICU stay: no IPPV < IPPV (not including for general anaesthesia indications) < ECMO < death.	Primary outcome	Mann Witney (predictors of no IPPV vs composite of IPPV/ECMO/death)  Kruskal-Wallis (four delivery group comparisons for each of no IPPV, IPPV, ECMO, death).
	Respiratory complications	Discharge	Incident	Incidence of any of: pneumothorax, subcutaneous or mediastinal emphysema, ventilator-associated pneumonia.	Exploratory	Kruskal-Wallis
	Renal complications	Discharge	Incident	Incidence of any of: acute kidney injury (RIFLE criteria), acute renal failure (RIFLE criteria), urinary tract infections, requirement for renal replacement therapy.	Exploratory	Kruskal-Wallis
	Septic shock	Discharge	Incident	ACCP/SCCM consensus criteria.	Not analyzed	
	Interventional or spontaneous delivery	Discharge	Ordinal	Interventional or spontaneous	Not analyzed	
Overall obstetric outcomes only for the delivery in ICU groups	Mode of delivery	Discharge	Ordinal	Vaginal or caesarean	Not analyzed	
	Gestational age at delivery	Discharge	Numeric	Median (IQR)	Exploratory	Mann Witney (2 groups: critical vs not critical)
	Indication for interventional delivery	Discharge	Ordinal	Maternal respiratory failure, other maternal obstetric complication (e.g. preeclampsia, hemorrhage), fetal indication	Not analyzed	
	Live birth or still birth	Discharge	Incident	Y/N	Exploratory	Fisher's exact test
Overall neonatal outcomes only for the delivery in ICU groups	Apgar score at 1-min	Discharge	Numeric	Median (IQR) $\geq 7$ versus $< 7$	Not analyzed	
	Apgar score at 5-min	Discharge	Numeric	Median (IQR) $\geq 7$ versus $< 7$	Not analyzed	
	Neonatal intubation and IPPV	Discharge	Incident	Y/N	Exploratory	Fisher's exact test
	Neonatal ICU admission	Discharge	Incident	Y/N	Exploratory	Fisher's exact test
	Length of neonatal hospital stay	Discharge	Numeric	Median (IQR)	Exploratory	Mann Witney (2 groups: critical vs not critical)

**Supplementary Table 2 (continued)**

	Data label	Data source	Data type	Data handling	Outcome	Analysis
Calculated longitudinal outcomes (see Supplementary Table 1 or Supplementary Table 3)	SOFA score	Calculated longitudinal	Numeric	Calculation from Supplementary Table 1 Supplementary Table 3	Primary longitudinal outcome	Mixed models repeated measures analysis
	PORCH score	Calculated longitudinal	Numeric	Calculation from Supplementary Table 1 Supplementary Table 3	Secondary longitudinal outcome	Mixed models repeated measures analysis
	FiO <sub>2</sub>	Measured or calculated longitudinal	Numeric	Calculation from Supplementary Table 3	Part of SOFA and PORCH	Not independently analyzed
	PaO <sub>2</sub> /FiO <sub>2</sub> ratio (P/F ratio)	Calculated longitudinal	Numeric	Calculation from Supplementary Table 3	Part of SOFA and PORCH  P/F on admission as predictor of outcome	Not independently analyzed  Mann Whitney (2 groups: no IPPV versus IPPV/ECMO/death)
	SpO <sub>2</sub> /FiO <sub>2</sub> ratio (S/F ratio)	Calculated longitudinal	Numeric	Calculation from Supplementary Table 3	Part of SOFA and PORCH  S/F on admission as predictor of outcome	Not independently analyzed  Mann Whitney (2 groups: no IPPV versus IPPV/ECMO/death)
	ROX index	Calculated longitudinal	Numeric	Calculation from Supplementary Table 3	ROX on admission as predictor of outcome	Mann Whitney (2 groups: no IPPV versus IPPV/ECMO/death)
Measured or recorded longitudinal outcomes	SpO <sub>2</sub>	Longitudinal	Numeric	Measured	SpO <sub>2</sub> on admission as predictor of outcome	Mann Whitney (2 groups: no IPPV versus IPPV/ECMO/death)
	PaO <sub>2</sub>	Longitudinal	Numeric	Measured	Part of SOFA and PORCH	Not independently analyzed
	PaCO <sub>2</sub>	Longitudinal	Numeric	Measured	Exploratory	Mixed models repeated measures analysis
	pH	Longitudinal	Numeric	Measured	Exploratory	Mixed models repeated measures analysis
	Base excess	Longitudinal	Numeric	Measured	Exploratory	Mixed models repeated measures analysis
	Heart rate	Longitudinal	Numeric	Measured	Exploratory	Mixed models repeated measures analysis
	Mean arterial pressure	Measured or calculated longitudinal	Numeric	Measured	Exploratory	Mixed models repeated measures analysis
	Sodium	Longitudinal	Numeric	Measured	Not analyzed	
	Potassium	Longitudinal	Numeric	Measured	Not analyzed	
	Urea	Longitudinal	Numeric	Measured	Not analyzed	
	Creatinine	Longitudinal	Numeric	Measured	Not analyzed	
	Bilirubin	Longitudinal	Numeric	Measured	Not analyzed	
	Lactate	Longitudinal	Numeric	Measured	Not analyzed	
	C-reactive protein	Longitudinal	Numeric	Measured	Not analyzed	
	Ferritin	Longitudinal	Numeric	Measured	Not analyzed	
	Troponin	Longitudinal	Numeric	Measured	Not analyzed	
	Complete blood count	Longitudinal	Numeric	Measured	Not analyzed	
	Coagulation	Longitudinal	Numeric	Measured	Not analyzed	
	Medications	Longitudinal	Descriptive	Antivirals, steroids, antibiotics, sedatives, muscle relaxants, blood or blood products, renal replacement therapy.	Not analyzed	

### **Supplementary Table 3.**

The list of Excel formulas used for calculated longitudinal outcomes. Two parameters were calculated some of the time when appropriate.

a) Mean arterial pressure was usually recorded, but if it was not, then it was calculated using the formula:

MAP = diastolic pressure + 1/3 (systolic – diastolic pressure).

b) If fractional inspired oxygen (FiO<sub>2</sub>) was recorded directly (e.g. when delivered via HFNC, NIPPV, IPPV) we used the recorded FiO<sub>2</sub>. Where FiO<sub>2</sub> was not recorded directly (e.g. when delivered via nasal cannula or face mask) we calculated FiO<sub>2</sub> from the oxygen flow rate using the formula\*\*:

FiO<sub>2</sub> = (oxygen flow × 3) + 21.

(see asterixis in table)

\* *No patients received dopamine or dobutamine in the OB-COVICU study.*

\*\* Coudroy R, Frat JP, Girault C, Thille AW. Thorax. 2020 Sep;75(9):805-807.

Stepfany Fuentes; Yuvraj S. Chowdhury. Fraction of Inspired Oxygen. StatPearls Publishing; 2022 Jan.

<https://www.ncbi.nlm.nih.gov/books/NBK560867/#article-21944.s2>

**Supplementary Table 3 (continued)**

Parameter	Reference cells for formulas	Formulas
S/F ratio	A2=SpO2 (%) C2=FiO2 (0-1)	=A2/C2
P/F ratio	B2=PaO2 (mmHg) C2=FiO2 (0-1)	=B2/C2
ROX index	D2=S/F ratio E2=Respiratory rate (x/min)	=D2/E2
SOFA(a) Platelets	C92=Platelets (10E9/L)	=IF(C92="", "", IF(C92=0, "", IF(C92>=150, 0, IF(AND(C92<150, C92>=100), 1, IF(AND(C92<100, C92>=50), 2, IF(AND(C92<50, C92>=20), 3, IF(C92<20, 4)))))))
SOFA(b) Bilirubin	C85=Bilirubin (micromol/l)	=IF(C85="", "", IF(C85=0, "", IF(C85<1.2, 0, IF(AND(C85<2, C85>=1.2), 1, IF(AND(C85<6, C85>=2), 2, IF(AND(C85<12, C85>=6), 3, IF(C85>=12, 4)))))))
SOFA(c) GSC	C18=GSC (0-15)	=IF(C18="", 0, 0)
SOFA(d) Creatinine	C82=Creatinine (micromol/l)	=IF(C82="", "", IF(C82=0, "", IF(C82<1.2, 0, IF(AND(C82<2, C82>=1.2), 1, IF(AND(C82<3.5, C82>=2), 2, IF(AND(C82<5, C82>=3.5), 3, IF(C82>=5, 4)))))))
SOFA(e) Haemodynamics	C33=MAP (mmHg) C45=Norepinephrine (mcg/kg/min) C51= Epinephrine (mcg/kg/min) C52=Dopamine(0-1)* C53=Dobutamine(0-1)*	=IF(AND(C33>=70, C45=0, C51=0, C52=0, C53=0), 0, IF(AND(C33<70, C45=0, C51=0, C52=0, C53=0), 1, IF(AND(OR(C52=1, C53=1), AND(C45=0, C51=0)), 2, IF(OR(AND(C45>0.001, C45<=0.1), AND(C51>0.001, C51<=0.1)), 3, IF(OR(AND(C45>0.1), AND(C51>0.1)), 4))))))
SOFA(f) Oxygenation	C72=PaO2 (mmHg) C36=SpO2 (%) C21=FiO2 (%) C22=FiO2 ECMO (%)	=IF(AND(C72="", (C36/IF(OR(C21>C22), C21, C22))*100>=302), 0, IF((C72/IF(OR(C21>C22), C21, C22))*100>=400, 0, IF(AND(C72="", (C36/IF(OR(C21>C22), C21, C22))*100<302, (C36/IF(OR(C21>C22), C21, C22))*100>=221), 1, IF(AND((C72/IF(OR(C21>C22), C21, C22))*100<400, (C72/IF(OR(C21>C22), C21, C22))*100>=300), 1, IF(AND(C72="", (C36/IF(OR(C21>C22), C21, C22))*100<221, (C36/IF(OR(C21>C22), C21, C22))*100>=142), 2, IF(AND((C72/IF(OR(C21>C22), C21, C22))*100<300, (C72/IF(OR(C21>C22), C21, C22))*100>=200), 2, IF(AND(C72="", (C36/IF(OR(C21>C22), C21, C22))*100<142, (C36/IF(OR(C21>C22), C21, C22))*100>=67), 3, IF(AND((C72/IF(OR(C21>C22), C21, C22))*100<200, (C72/IF(OR(C21>C22), C21, C22))*100>=100), 3, IF(AND(C72="", (C36/IF(OR(C21>C22), C21, C22))*100<67, (C36/IF(OR(C21>C22), C21, C22))*100>=0), 4, IF(AND((C72/IF(OR(C21>C22), C21, C22))*100<100, (C72/IF(OR(C21>C22), C21, C22))*100>=0), 4))))))))))
SOFA TOTAL	C108=SOFA(a) C109=SOFA(b) C110=SOFA(c) C111=SOFA(d) C112=SOFA(e) C114=SOFA(f)	=IF(OR(C108="", C109="", C110="", C111="", C112="", C114=""), "", C108+C109+C110+C111+C112+C114)

**Supplementary Table 3 (continued).**

PORCH (a) PEEP	C26=PEEP (cmH2O)	=IF(OR(C26="",C26<6),0,IF(AND(C26>=6,C26<9),1,IF(AND(C26>=9,C26<12),2,IF(AND(C26>=12,C26<15),3,IF(C26>=15,4))))))
PORCH(b) Oxygenation	C72=PaO2 (mmHg) C36=SpO2 (%) C21=FiO2 (%) C22=FiO2 ECMO (%)	=IF(AND(C72="", (C36/IF(OR(C21>C22),C21,C22))*100<=302),0,IF((C72/IF(OR(C21>C22),C21,C22))*100>=400,0,IF(AND(C72="", (C36/IF(OR(C21>C22),C21,C22))*100<302, (C36/IF(OR(C21>C22),C21,C22))*100>=221),1,IF(AND((C72/IF(OR(C21>C22),C21,C22))*100<400, (C72/IF(OR(C21>C22),C21,C22))*100>=300),1,IF(AND(C72="", (C36/IF(OR(C21>C22),C21,C22))*100<221, (C36/IF(OR(C21>C22),C21,C22))*100>=142),2,IF(AND((C72/IF(OR(C21>C22),C21,C22))*100<300, (C72/IF(OR(C21>C22),C21,C22))*100>=200),2,IF(AND(C72="", (C36/IF(OR(C21>C22),C21,C22))*100<142, (C36/IF(OR(C21>C22),C21,C22))*100>=67),3,IF(AND((C72/IF(OR(C21>C22),C21,C22))*100<200, (C72/IF(OR(C21>C22),C21,C22))*100>=100),3,IF(AND(C72="", (C36/IF(OR(C21>C22),C21,C22))*100<67, (C36/IF(OR(C21>C22),C21,C22))*100>=0),4,IF(AND((C72/IF(OR(C21>C22),C21,C22))*100<100, (C72/IF(OR(C21>C22),C21,C22))*100>=0),4))))))))))
PORCH(c) Respiration Support	C4=Nasal Canula(0-1) C5=Face Mask(0-1) C7=High Flow NC(0-1) C8=HFNC + reservoir (0-1) C9=CPAP/BiPAP/NIPPV(0-1) C11=Ventilated(0-1) C12=Proned(0-1) C13=Nitric Oxide(0-1) C15=ECMO(0-1)	=IF(AND(C4=0,C5=0,C7=0,C8=0,C9=0,C11=0,C12=0,C13=0,C15=0),0,IF(AND(OR(C4=1,C5=1),C7=0,C8=0,C9=0,C11=0,C12=0,C13=0,C15=0),1,IF(AND(OR(C4=0,C4=1),OR(C5=0,C5=1),OR(C7=1,C8=1),C9=0,C11=0,C12=0,C13=0,C15=0),2,IF(AND(OR(C4=0,C4=1),OR(C5=0,C5=1),OR(C7=0,C7=1),OR(C8=0,C8=1),C9=1,C11=0,C12=0,C13=0,C15=0),3,IF(AND(OR(C4=0,C4=1),OR(C5=0,C5=1),OR(C7=0,C7=1),OR(C8=0,C8=1),OR(C9=0,C9=1),OR(C11=1,C12=0,C13=0,C15=0),4,IF(AND(OR(C4=0,C4=1),OR(C5=0,C5=1),OR(C7=0,C7=1),OR(C8=0,C8=1),OR(C9=0,C9=1),OR(C11=0,C11=1),OR(C12=0,C12=1),OR(C13=1,C13=1),C15=0),5,IF(AND(OR(C4=0,C4=1),OR(C5=0,C5=1),OR(C7=0,C7=1),OR(C8=0,C8=1),OR(C9=0,C9=1),OR(C11=0,C11=1),OR(C12=0,C12=1),OR(C13=0,C13=1),C15=1),6,""))))))))
PORCH(d) Chest Ray	C98=Chest Xray COXRADS score  Score results 0= No chest involvement 1,2,3,4= Mild chest involvement 5,6= Moderated chest involvement 7,8,9= Severe chest involvement 10= Severe form	=IF(OR(C98="",C98="No chest involvement"),0,IF(C98="Mild chest involvement",1,IF(C98="Moderate chest involvement",2,IF(C98="Severe chest involvement",3,IF(C98="Severe form",4,"")))))
PORCH(e) Haemodynamics	C33=MAP (mmHg) C42=Norepinephrine (0-1) C46=Vasopressin(0-1) C48=Epinephrine(0-1) C52=Dopamine(0-1)* C53=Dobutamine(0-1)* C54=Milrinone(0-1)	=IF(OR(C33="",C42="",C46="",C48="",C52="",C53="",C54=""),",",IF(AND(C33>=65,C42=0,C46=0,C48=0,C52=0,C53=0,C54=0),0,IF(AND(C33<=65,C42=0,C46=0,C48=0,C52=0,C53=0,C54=0),1,IF(AND(C42=1,C46=0,C52=0,C48=0,C53=0,C54=0),2,IF(AND(C42=1,OR(C46=1,C52=1),C48=0,C53=0,C54=0),3,IF(AND(C42=1,OR(C46=1,C52=1),OR(C48=1,C53=1,C54=1)),4,""))))))))
Total PORCH Score	C119=PORCH(a) C112=PORCH(b) C120=PORCH(c) C121=PORCH(d) C118=PORCH(e)	=IF(OR(C120="",C119="",C121="",C118="",C112=""),",",C120+C119+C121+C118+C112)

**Supplementary Table 4.**

Comorbidities in the OB-COVICU study. Durations until ICU admission from the onset of COVID symptoms, from COVID diagnosis and from hospital admission. All data broken down by patient group (“delivery-not-critical”, “delivery-critical”, “no-delivery”, and “postpartum”). For elapsed times until ICU admission broken down by maternal outcome, see Supplementary Figure 5.

		Delivery-not-critical (n=14)	Delivery-critical	No delivery (n=34)	Post-partum (4)
Respiratory disease		0	1	1	0
Cardiovascular disease		1	4	2	0
Gastrointestinal disease		0	0	1	0
Liver disease		0	0	0	0
Renal disease		0	2	0	0
Recreational drugs/alcohol		0	0	0	0
Autoimmune disease		0	1	1	1
Thyroid disease		3	9	5	0
Neurological disease		0	1	0	0
Haematological disease		1	3	1	1
Musculoskeletal disease		0	0	1	0
APACHE II score		5.5 ± 2.5	8.0 ± 3.5	7.0 ± 2.8	9.0 ± 5.0
Duration until ICU admission	From COVID symptoms	4.0 ± 3.3	8.5 ± 4.3	7.0 ± 4.8	9.5 ± 6.0
	From +ve COVID PCR test	2.5 ± 3.8	5.5 ± 5.3	4.0 ± 6.5	7.0 ± 1.8
	From hospital admission	0.5 ± 1.0	1.0 ± 2.0	0.0 ± 1.0	4.5 ± 3.8

**Supplementary Table 5.**

Maternal outcomes (not-IPPV, IPPV, ECMO and death) broken down by patient group (no-delivery, delivery-critical, delivery-not-critical, and postpartum).

Maternal outcome	No delivery	Delivery-critical	Delivery-not-critical	Postpartum	Significance
<b>No IPPV</b>	28/34 (82%)	6/32 (19%)	12/14 (86%)	0/4 (0%)	p<0.0001
<b>IPPV</b>	6/34 (18%)	26/32 (81%)	2/14 (14%)	4/4 (100%)	p<0.0001
<b>ECMO</b>	0/34 (0%)	12/32 (38%)	0/14 (0%)	3/4 (75%)	p<0.0001
<b>Death</b>	0/34 (0%)	1/32 (3%)	0/14 (0%)	2/4 (50%)	p=0.003